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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,261	03/25/2004	Tal Drory	200315227-1	6926

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EXAMINER

AMIN, JWALANT B

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 09/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/809,261	DRORY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jwalant Amin	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-10,12,13 and 16-18 is/are rejected.
- 7) ☒ Claim(s) 2,3,11,14,15,19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/25/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, 5, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kronmiller et al. (6,701,306 hereinafter "Kronmiller").

Regarding claim 1, Kronmiller teaches a method for defining attributes of polygon border tiles, comprising decomposing a polygon into a plurality of segments (Fig. 9, col. 3 lines 56-60, col. 8 lines 36-39, dividing the polygon's data space into a number of data regions corresponds to decomposing a polygon); decomposing the segments into a plurality of border tiles (Fig. 10, Fig. 11, col.9 lines 31-38 and lines 61-62, dividing the IC layout into a number of tile regions corresponds to decomposing a segment into plurality of tiles); designating at least one edge for each border tile (Fig. 22, the lines of the rectangular tile correspond to the edges of the tile, the right edge corresponds to the eastern edge); determining a spatial relationship between the designated edge of each border tile and the polygon (col.9 lines 62-67, col. 10 lines 1-4, storing the interconnect-line data into tile data structure and querying the data corresponds to determining spatial relationship); and generating the attributes of the border tiles based on the spatial relationship between the designated edge of each border tile and the polygon (col. 9 lines 49-56, the line of the tile corresponds to the edge of the tile, the source and

non-source lines corresponds to the attributes, and outside and inside of the tile corresponds to the spatial relationship).

Regarding claim 4, Kronmiller teaches designating at least one edge for each border tile further comprises designating an eastern edge for each border tile (Fig. 22, the lines of the rectangular tile correspond to the edges of the tile, the right edge corresponds to the eastern edge).

Regarding claim 5, Kronmiller teaches designating at least one edge for each border tile further comprises designating the same edge for each of the plurality of border tiles (Fig. 10, Fig. 11, Fig. 22, col.9 lines 31-38 and lines 61-67, number of tile regions corresponds to plurality of tiles, and the lines of the rectangular tile correspond to the edges of the tile).

Regarding claim 7, Kronmiller teaches designating the segments as vectors that traverse in a clockwise direction around a border of the polygon (col. 7 lines 32-48, the vector  $P1 \rightarrow P0$  corresponds to segment traversing in clockwise direction); and determining an attribute of a border tile based on a proximity of one of the vectors to one of the edges of a border tile and based on a direction of the one of the vectors through the border tile (col. 7 lines 49-57, outside and inside corresponds to the attribute of the tile, and defining a half plane corresponds to the direction of the vector).

Regarding claim 8, Kronmiller teaches decomposing multiple segments through a single border tile (Fig. 22, col. 9 lines 61-67, col. 10 lines 1-2, number of tile regions corresponds to plurality of tiles, and the lines of the rectangular tile correspond to the edges of the tile).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 6, 9, 10, 12, 13, 16, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kronmiller (6,701,306) in view of Chui (6,873,343).

Regarding claim 6, Kronmiller discloses all of the claimed limitations as stated above in claim 1, except that to determine if the designated edge of a border tile is within an interior space of the polygon. However, Chui teaches that if the edge of the border tile is within an interior space of the polygon then it can be classified as "hard" or "easy" to compress based on a comparison of block classification with respective threshold values (col. 26 lines 58-67, col. 27 lines 1-4, interior tiles correspond to one edge disposed completely within the polygon). It would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of Chui into the method of Kronmiller to produce a better data compression by

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determining and classifying the tiles as interior or exterior based on it's spatial relationship with the polygon.

Regarding claims 9 and 16, Kronmiller teaches a computer system comprising a processor and memory having computer readable code executable by the processor (col.2 lines 20-21, col. 19 lines 39-40, col. 21 line 12, processing in a computer corresponds to computer processor, smaller system memories corresponds to computer memory, executed by a computer corresponds to executable by the processor); computer-readable medium having computer-readable program code (col.21 lines 9-13); defining a polygon having a border that is non-self-intersecting (Fig. 2, col. 4 lines 23-32, convex polygon corresponds to non-self-intersecting polygon), and formed of a plurality of segments on a grid of tiles (Fig. 13, col. 10 lines 55-57, rectangular tiles correspond to grid of tiles), a plurality of border tiles that intersect the segments (col. 9 lines 61-62, number of tile regions corresponds to plurality of tiles, IC layout corresponds to the polygon segments), and generating an attribute associated with at least one edge of a border tile (col. 9 lines 49-56, the line of the tile corresponds to the edge of the tile, the source and non-source lines corresponds to the attributes, and outside and inside of the tile corresponds to the spatial relationship).

Kronmiller discloses all of the claimed limitations as stated above, except that the attribute is selected from the group consisting of: the at least one edge crossing a segment, the at least one edge disposed completely within the polygon, and the at least one edge disposed completely outside the polygon. However, Chui teaches that tiles with an edge within an interior space of the polygon can be classified as "hard" or "easy"

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to compress based on a comparison of block classification with respective threshold values (col. 26 lines 58-67, col. 27 lines 1-4, interior tiles correspond to one edge disposed completely within the polygon). It would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of Chui into the system of Kronmiller to classify the border tiles as crossed, interior, or exterior using Chui's classification system and threshold values. The classification of the tiles based on respective threshold values can produce better data compression.

Regarding claim 10, Kronmiller discloses all of the claimed limitations as stated above in claim 9, except that the attribute can be modified on at least two different occasions for the same border tile. However, Chui teaches that it is possible to modify the attributes of the same tile using different threshold values at different occasions (col. 26 lines 58-61, one or more threshold values correspond to at least two different occasions). It would have been obvious to one of ordinary skills in the art at the time the present invention was made to combine the teachings of Chui into the method of Kronmiller to modify the attributes of same border tile by changing it's threshold value at different stage of time to produce better compression of data.

Regarding claim 12, Kronmiller further teaches that the attribute is associated with an eastern edge of the border tile (Fig. 22, the right edge corresponds to the eastern edge).

Regarding claim 13, Kronmiller further teaches to convert the polygon to a non-self-intersecting chain-code (Fig. 2, col. 4 lines 23-32, convex polygon corresponds to non-self-intersecting polygon). Kronmiller discloses all of the claimed limitations as

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stated above, except that at least one segment passes twice through the same border tile. However, Chui teaches that it is possible for the same segment to pass twice through the same tile using different threshold values at different occasions (col. 26 lines 58-61, one or more threshold values correspond to passing at least twice through the same border tile). It would have been obvious to one of ordinary skills in the art at the time the present invention was made to combine the teachings of Chui into the method of Kronmiller to make a segment pass twice through the same border tile at a different stage of time by changing the threshold value such that it will result into better data compression.

Regarding claim 17, Kronmiller further teaches that the plural segments are non-self-intersecting (Fig. 2, col. 4 lines 23-32, convex polygon corresponds to non-self-intersecting polygon).

Regarding claim 18, Kronmiller further teaches to identify a spatial relationship between a direction of the at least one segment through the first border tile to define an attribute of the first border tile (col. 9 lines 49-56 and lines 62-67, col. 10 lines 1-2, the source and non-source lines corresponds to the attributes, and outside and inside of the tile corresponds to the spatial relationship, interconnect-line corresponds to segment of the polygon, storing the interconnect-line data into tile data structure and querying the data corresponds to determining spatial relationship).



***Allowable Subject Matter***

Claims 2 and 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: regarding claim 2, the prior art of record fails to show generating a first attribute if the designated edge of the border tile crosses the polygon. Claim 3 is dependent on claim 2; therefore the examiner gives the same reason as set forth above.

Claims 11, 14 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: regarding claim 11, the prior art of record fails to show that the attribute is set to first condition and then re-evaluated and set to a second condition if multiple segments pass through the same border tile. Regarding claim 14, the prior art of record fails to show defining a y-axis through a border tile, and generating an attribute based on proximity of a segment through the y-axis. Claim 15 is dependent on claim 14; therefore the examiner gives the same reason as set forth above.

Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter: regarding claim 19, the prior art of record fails to show defining a horizontal axis through the first border tile and identifying a spatial relationship between the at least one segment and the horizontal axis to define an attribute. Claim 20 is dependent on claim 19; therefore the examiner gives the same reason as set forth above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jwalant Amin whose telephone number is (571) 272-2455. The examiner can normally be reached on Monday – Friday from 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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